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Marlene H. Dortch, Esq.
Secretary
Federal Communications Commission
45 L Street NE
Washington, DC 20554

RE: Wireless Telecommunications Bureau and Office of Engineering and Technology Seek Comment on NextNav Petition for Rulemaking – WT Docket No. 24-240; RM-11989.

Dear Secretary Dortch:

The Illinois State Toll Highway Authority (the "Tollway") submits this Comment Letter in response to the NextNav Petition for Rulemaking to reconfigure, reserve, and commercialize the Lower 900 MHz Band, specifically the 902 – 907 and 918 – 928 MHz bands. Tollway respectfully opposes this petition due to the significant and detrimental impact it would have on our RFID-dependent toll collection system and broader implications on transportation infrastructure. The proposed reallocation would restrict critical access to the Lower 900 MHz Band for the Tollway and other non-M-LMS licensees, leading to severe interference with our electronic toll collection systems—an essential component of our operations. This interference would compromise the efficiency and reliability of toll collection, disrupt the flow of goods and services across Illinois, and impose substantial financial and operational burdens on the Tollway, ultimately undermining our ability to serve our customers and fulfill our fiduciary obligations to bondholders.

The Tollway (www.illinoistollway.com) is more than 12 years into a 16-year, $15 billion capital program investment in the region to promote a safe and efficient system of highways, encourage economic development and deliver the highest possible level of service to our customers. Our roadways include more than 290 miles in Northern Illinois, covering 400 lanes and 200 distinct tolling zones with RFID equipment.

More than 1.6 million daily customers across our 12-county region rely on us to get them to their destinations safely, reliably, and efficiently. We service both local commuters in the Chicago metropolitan area and significant commercial movement of goods through our proximity to some of nation's largest intermodal facilities and busiest airports. Free flow electronic tolling reduces crashes, traffic congestion and fuel use, while leading to environmental benefits through lower emissions. The Tollway is a user-fee system with most of our customers paying for tolls at highway speeds using an RFID transponder. These fees support critical roadway maintenance and infrastructure improvements throughout the region.

Our transponder-based tolling operations include the following:

- More than 5.3 million active transponder accounts
- More than 9.1 million active transponders in use
- As part of the E-ZPASS consortium, access to more than 55 million transponder users
- More than 857 million total transponder toll transactions in 2023
- More than $1.3 billion in transponder-based revenue in 2023

Additionally, transponders are a key component of mandated national interoperability, with a set level of service required for toll agencies across the nation. This provides customers with a seamless tolling experience when traveling across the country. Any change to the technology must be considered in this broader context of mandated national interoperability.

The Tollway's RF equipment supports a frequency range from 902.5 to 921.5 MHz, which has provided the flexibility to introduce new protocols. Currently, the Tollway's use ranges from 909 to 921.5 MHz.

CONCERNS WITH THE NEXTNAV PETITION FOR RULEMAKING

The NextNav petition for rulemaking proposes changes that limit the public and Tollway's available bandwidth and may require a wholesale change to the type and location of technology used to collect tolls from customers. These changes will unduly burden the Tollway as follows:

1. ***Economic harm to toll collection.*** NextNav contends that its proposal would enable its terrestrial system to provide positioning, navigation, and timing (PNT) services. This forms the substance of its request and positioning: the Lower 900MHz Band is needed to shore up and provide redundancy to the nation's Global Positioning System.

   Yet, as proposed, the PNT system would occupy a very small, nearly insignificant percentage of the requested band (estimated two percent). If PNT services represented the sole level of usage in the shared Lower 900 MHz, it is probable that there would be a low significance of interference. However, NextNav intends to commercialize a large portion of the requested spectrum, for 5G purposes. The vast majority of the requested band would go toward NextNav's planned establishment of a multi-billion-dollar platform for commercial use and leasing to numerous companies for mobile applications, autonomous vehicles, eVTOLS and UAVs, and enterprise ventures[1]. This represents a great threat of frequency interference with and degradation of the Tollway toll collection system.

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[1] More than 200 opportunities were identified in NextNav's 2021 presentation to potential investors. https://s28.q4cdn.com/906934827/files/doc_presentations/2021/06/10/NextNav-Investor-Presentation-6.10.21.pdf

Low latency and highly dependable read accuracy are hallmarks of the existing tolling technology. We accurately detect and locate RF devices at speeds over 100 MPH with no degradation in customer experience or efficacy of revenue collection. Our RF technology must have uninterrupted communications to correctly identify transponders. Shrinking the available bandwidth while potentially increasing the number of adjacent, competing, usages, is expected to degrade the performance of the existing technology. This could necessitate actions including relocating entire toll zones and replacing all RFID equipment which includes over 200 roadside units at tolling zones and millions of transponders issued to patrons.

The Tollway's equipment is highly sensitive to interference which can lead to missed or erroneous tolls, causing revenue loss and customer service issues. Not only is direct interference from NextNav and its partners' proposed devices a concern, but existing devices also will be compressed into a narrower band, increasing the likelihood of interference. NextNav also proposed much higher power levels than are used in the Tollway's current operating environment. This will significantly alter RF patterns and could make portions of the band unusable when base stations are deployed nearby. Comprehensive testing is needed to determine the extent of possible risk.

The Tollway's deployments are entirely location specific. The Tollway's collection points (ramps and plazas) are strategically placed along the Illinois Tollway to prevent avoidance of payment for our services, to meet the requirements of our trust agreement. The location of each tolling point is based on a myriad of factors, i.e., access to sufficient right-of-way, equity in collections, maximizing throughput, minimizing toll avoidance, and minimizing traffic congestion. Relocation in this case would require determining the feasibility of that site and impact on revenue collection and leakage, designing and constructing a new site and gantry installation, equipment installation, etc.

The RF antennas used for tolling require frequency spacing to ensure there is minimal crosstalk between antennas/channels on the reader. This frequency spacing is required so that the software can determine a vehicle's location relative to a specific antenna. If there is significant interference at any location, a constricted band will prevent needed flexibility. Larger toll zones require more of the band to accommodate more antennas. As an example, the Tollway currently is integrating a single toll zone with seven instrumented lanes.

The petitioned changes may require equipment replacement that could exceed more than $50 million in capital costs and operating expenses. In addition, the re-certification of tolling RFID equipment would be extensive and costly to tune and validate performance at more than 200 locations. These locations are fixed, with minimal flexibility for repositioning equipment.

If equipment replacement and retuning was not able to accommodate the interference, then a change of tolling location would be required. This type of change requires substantial costs related to roadway planning, design, engineering and construction, along with attendant multijurisdictional coordination. The expenses can range between $5 million and $25 million per location – assuming new locations can even be identified that are not also compromised by the potential competing bandwidth risk of NextNav's petition. These projects can take years to implement. Additionally, many sites are highly constrained, offering few to no options for relocation.

NextNav seeks to remove restrictions and thereby provide more flexibility for its intended future private use, while restricting the flexibility of current public users and their future use. To displace or jeopardize this well-established and supported publicly available band used by multiple public entities for a single monopolistic provider while there are other available bands would be divergent and dismissive of good public policy. Restricting access in favor of commercial use would be detrimental to the public interest.

2. *Limitations on public access and services*. NextNav contends that the Lower 900 MHz Band is underutilized. NextNav does not define or substantiate what it understands to be underutilization, nor why other bands would not suffice to meet its needs.

According to FCC records, approximately 1,500 non-M-LMS users hold licenses and operate within the Lower 900 MHz. This band was intended to accommodate low frequency users such as the Tollway and transportation agencies. In addition to electronic toll collection entities, the band is utilized by the nation's departments of transportation, hundreds of municipalities, regional transportation agencies and tolling entities to manage and monitor traffic and respond to traffic incidents. Current utilization level allows these public entities to operate with minimum interference, with growth potential, and the ability to maintain robust communication systems.

As it currently stands, using the Lower 900 MHz band requires identifying other users in the same spectrum and area to minimize and eliminate frequency interferences. The RF energy radiated from NextNav's license would multiply that due diligence exercise by introducing a multitude of high-volume users. High-volume users would increase interference and communications failure which would lead to a reduction in the Tollway's operational efficiency.

Nonetheless, an enormous benefit of the Lower 900 MHz bandwidth is its near line of sight that can communicate even with some obstructions. While this makes it attractive to NextNav particularly for its plans to occupy this space for commercial purposes, it is more than attractive to the Tollway and public entities, it is necessary. The Tollway and other transportation entities require this space for the public benefit of providing safe and reliable transportation infrastructure, and in the case of the Tollway, to secure revenue for infrastructure funding.

A narrower available band will reduce options to make future tolling improvements that would provide the public with more payment options and better service. For example, the Tollway recently was able to provide customers with a new transponder option that is cheaper, easier to use and fully interoperable for paying tolls. The transponder’s new protocol required the use of multiple frequencies which could be accommodated by the available bandwidth. This type of flexibility to improve the customer experience would be reduced under NextNav’s proposed plan.

By reducing the available spectrum, the proposed changes have the potential to reduce overall innovation in the toll and transportation industry, such as innovative payment solutions for customers. Future toll transponder uses could include new payment services deployed at parking facilities, retail drive-thrus, electric vehicle charging stations, and for private facility security access. Many of these applications will be in dense urban environments and not only along highway corridors, which may increase the potential for interference if appropriate frequency separation is not maintained.

The application of road usage charging is being researched and piloted at the Tollway and across the nation. Although there has been no determination of the spectrum to be used, mileage-based charging and reporting is another developing technology that may be impacted by the NextNav proposal.

There also is a significant concern that NextNav's proposed implementation of 5G base stations could greatly limit potential tolling locations in the future. This impacts the Tollway's ability to invest in new roads that connect communities, reduce congestion and environmental impacts, improve customers' quality of life, and support job growth and economic development throughout the region. Unreliable or more costly means of toll collection adds financial risk in the form of higher bonding costs while placing needed infrastructure maintenance and improvement in jeopardy.

3. *Untested alternative public spectrum*. While other RF spectrum technologies or alternative payment methodologies (GPS, 5.9GHz, telematics) may provide for an alternative or supplement to current technology, these technologies are either unproven or more costly than the current system. Migration to any alternative solution would pose undue economic harm to the Tollway and industry while disrupting and inconveniencing millions of drivers in our region.

   This same concern applies when trying to fill the gap with other existing technologies, such as video to capture license plates and pursue toll collection. This method is far less reliable than the RF solutions and requires a large investment and higher operational cost. If the Tollway needed to rely entirely on video for revenue capture, our operating costs would likely increase by over $150 million per year. Additional risks with video (e.g. inclement weather, unreadable plates, inability to locate or identify a vehicle owner of record, etc.) could jeopardize up to 10% of revenue ($160 million per year) for our agency.

4. *Detrimental impact on national toll interoperability*. To achieve interoperability between tolling entities, as mandated by Congress in 2012, our industry has worked cooperatively to establish standards and introduce new technologies capable of reading multiple transponders. These technologies are premised on full access to, and reliability of the bandwidth threatened by NextNav's petition. Electronic tolling protocols actively deployed and in use with toll reader equipment are E-ZPass; 6C and SeGo. Millions of dollars have been spent by the Tollway and other tolling entities and the system providers to design, develop, and test new equipment and standards and comply with the mandate and utilize available spectrum.

5. *NextNav's lack of cooperation with impacted users.* As the proposer of these changes, it is incumbent that NextNav demonstrate how it would protect other Lower 900 MHz users from interference prior to any modifications. To date, NextNav has not demonstrated its ability to prevent interference through its testing of any equipment in any scenario or condition, nor has it demonstrated an understanding of the magnitude of its requests on the tolling industry.

   To minimize interference, at a minimum, NextNav must conduct significant testing in multiple environments, at multiple locations (each site is different), and using different transponders and vehicles. A substantial spectrum separation also would be necessary to reduce the potential for interference. This separation should occur within the NextNav MHz bands.

   In May 2024, Tollway representatives attended a meeting with NextNav and members of the International Bridge, Tunnel and Turnpike Association (IBTTA), an industry association. NextNav stated it had performed some preliminary testing with a tolling protocol used by the E-ZPass group. NextNav did not share who performed the test, the scope and breadth of the test, or any detailed results from the test. Their representatives offered to share the test results within two weeks of the meeting. As of this date, NextNav has not shared any test results. NextNav has not contacted the Tollway independently to discuss potential impacts, its test results, or any potential protections it could offer or that might be feasible.

NextNav's inactions prove that it has no appreciation of the potential costs to the industry, the extent of our reliance on the Lower 900 MHz band, the potential disruptions to our operations, and the probable impediments to our toll revenue collection and resultant losses.

CONCLUSION

The petitioned changes would reduce non-M-LMS licensees' current access to 14 MHz of spectrum by reducing it down to 11 MHz, remove unlicensed operations' protections against unacceptable interference from M-LMS, and provide a high powered wireless broadband plan that could overwhelm current Tollway operations within our allotted band. As previously noted, the Tollway believes that the petitioned changes would significantly disrupt the Tollway's operations, including:

- Loss of revenue and increased capital and operational costs,
- Restraining innovation designed to serve customers, address climate and congestion challenges, and deliver operational efficiencies,
- Negatively impacting our 1.6 million daily customers who travel on our roads, and
- Preventing future expansion of the roadway network to best serve our communities.

The Tollway believes that NextNav has not shown how its PNT services require the proposed reconfiguring of the lower 900 MHz band and has made unsupported claims regarding the testing of tolling devices and the planned protection of incumbent users of the spectrum. In addition to tolling applications, the Tollway recommends a review of potential impacts to traffic management and safety systems used by road operators across the country, including in relation to V2X applications.

Any proposed solution will require in-depth laboratory and field testing of new or reconfigured tolling equipment to ensure accuracy and interoperability. As these RFID transactions represent financial transactions, all activities must be conducted with the utmost care and consideration and must meet all industry standard privacy and security requirements. Conducting this testing is a significant level of effort for the Tollway and industry.

For the reasons contained herein, the Tollway requests that the FCC deny this NextNav petition for rulemaking.

Respectfully submitted,

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